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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/665,401 | 09/18/2003 | Michael Jacob | 14580/028001 / FP1941 | 4394 |
| 20985 | 7590 | 03/02/2005 | EXAMINER | |
| FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081 | | | YOHA, CONNIE C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2827 | |

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,401

Applicant(s)

JACOB ET AL.

Examiner

Connie C. Yoha

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

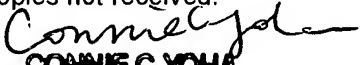
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


CONNIE C. YOHA
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1 Claims 1-90 are presented for examination.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of "wherein the at least one reference capacitor includes two reference capacitors" in claim 2 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Also, the limitation of "...and wherein multiple such cells are connected in parallel to connect the cell plate line to the first bit-line through the first select transistor" in claim 9, starting at line 2-4 must also be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1-4 and 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Pepaliolios, Pat. No. 5218566.

With regard to claim 1, Pepaliolios discloses a memory comprising: a first capacitor (fig. 6, a capacitor in memory array 100) for storing digital data connecting a

cell plate line to a first bit-line (fig. 6, 112) through a first select transistor (fig. 6, a transistor corresponding to the capacitor in the memory array 100), the first select transistor activated through a connection to a word line (fig. 6, WLn); at least one reference capacitor (fig. 6, 40 or 44) for providing a reference voltage to a reference bit line (fig. 6, 50) (col. 2, line 49-58); a sense amplifier (fig. 6, 110) connected to the first (fig. 6, 112) and reference bitlines (fig. 6, 68) for measuring a differential read signal on the first and reference bitlines (col. 8, line 7-16); and a toggle flip flop for alternately changing polarization of charge stored on the at least one reference capacitor (col. 9, line 55-58).

With regard to claim 2, Pepaliolios discloses wherein the at least one reference capacitor includes two reference capacitors, each one alternating between serving as a switching reference capacitor and a non-switching reference capacitor (col. 9, line 29-33).

With regard to claim 3, Pepaliolios discloses wherein the reference capacitors are ferroelectric capacitors (col. 9, line 2, line 49-53) (also with regard to claim 4).

With regard to claim 6, Pepaliolios discloses wherein the toggle flip flop alternately changes the polarization of the charge stored on the at least one reference capacitor by toggling write back signals supplied to the two reference capacitors (col. 9, line 29-58).

With regard to claim 7, Pepaliolios discloses wherein the charges on the two reference capacitors are averaged to supply the reference voltages to the sense amplifier (col. 2, line 62-col. 3, line 2).

With regard to claim 8, Pepaliolios discloses wherein the first capacitor for storing digital data is part of a 1t1c memory cell (fig. 6, memory cell in the array 100) (col. 2, line 59-62).

With regard to claim 9, Pepaliolios discloses wherein the at least one reference capacitor (fig. 6, 40, 44) is part a cell also including a transistor (fig. 6, 42, 46), and wherein multiple such cells are connected in parallel to connect the cell plate line (fig. 6, 130) to the first bit-line through the first select transistor.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pepaliolios, Pat. No. 5218566 in view of Eliason, Pat. No. 6650158.

With regard to claim 5, Pepaliolios, as applied in prior rejection, disclosed all claimed subject matter except wherein the toggle flip flop is comprised of NAND gates. However, Eliason disclosed a flip flop of a NAND gates type (fig. 1, 10) used in a ferroelectric non-volatile logic device (col. 1, line 14-19) to output a two stable states. Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to incorporate the use of a NAND gate structure flip flop

device in Eliason's into Pepaliolios' to use as a sequential logic device to toggle change of the polarization charge stored on the reference capacitors.

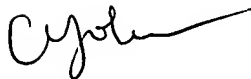
Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. Bohm et al (6487128) disclose a memory device with reference cells.
7. When responding to the office action, Applicants= are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.
8. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1799. The examiner can normally be reached on Mon. - Fri. from 8:00 A.M. to 5:30 PM. The examiner's supervisor, Hoai Ho, can be reached at (571) 272-1777. The fax phone number for this Group is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0956.
10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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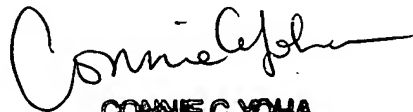
Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov> should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



C. Yoha

February 2005



CONNIE C. YOH
PRIMARY EXAMINER